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Trends in the incidence of sickness absence due to common mental disorders between 2001 and 2007 in the Netherlands

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Background: Mental disorders are an important public health problem because of their prevalence and the probability of long-term work disability. The incidence of sickness absence with mental disorders has increased between 1985 and 2000, but little is known about trends in recent years. This study investigated the incidence of sickness absence due to common mental disorders in the Netherlands from 2001 to 2007. **Methods:** Observational study in about 1 million employees, working in various economic sectors, representative for the Dutch workforce. Sickness absence episodes were medically certified by an occupational physician utmost in the fifth week of absence. The 12-month incidence of medically certified sickness absence was calculated for each year by dividing incident episodes by the number of employees. Sick days due to common mental disorders were computed as percentage of the total number of medically certified sick days. **Results:** The 12-month incidence of sickness absence due to common mental disorders was 2.2% in 2001, increased to 2.7% in 2004 and decreased thereafter to 2.0% in 2007. The percentage of sick days due to common mental disorders was highest in the education sector (39%) followed by financial services (31%) and health care (30%). **Conclusions:** In the Netherlands, the incidence of sickness absence with common mental disorders was highest in 2004 and has decreased since then probably because of changes in sick leave compensation, economic market position and company policies.

Keywords: 12-month incidence, epidemiology, mental disorders, sickness absence.

Introduction

Mental disorders are common in the general population and their disease burden is substantial. The prevalence of well-defined psychiatric disorders has been relatively constant, whereas less well-described disorders such as neurotic conditions and mood disorders have increased.[1,2] Mental disorders constitute one of the most common diagnostic groups reported on medical certificates for sickness absence possibly because work demands high-cognitive capacities, stress tolerance and social competence.[3–5]

Mental disorders are associated with long-term absence from work[6–9] and account for up to one-third of disability pension awards in countries belonging to the Organization for Economic Cooperation and Development, including most of Europe, USA, Canada, Australia, New Zealand, Mexico, Japan and Korea.[10] The costs of disability pension with psychiatric diagnoses are higher than for musculoskeletal disorders even though fewer individuals are affected.[3] Hensing *et al.*[11] reported an expenditure of 2676 million Euros in 2005 for sickness absence, medical rehabilitation and disability pension due to psychiatric disorders in Norway. In the Netherlands, the annual costs of depressive disorders are estimated at 5000 Euros per capita and those of anxiety disorders at 3600 Euros per capita most of which are due to production losses.[12] Therefore, sickness absence due to mental disorders is an important topic in both public and occupational health.

Psychiatric diagnoses, especially mood disorders and neurotic disorders, account for an increasing proportion of sickness absence and invalidity benefits in Great Britain since the middle of the 1980s.[13] The cumulative incidence of psychiatric sickness absence episodes (≥7 consecutive days) was 2.1% for women and 1.3% for men in Sweden in 1985.[3] In the Norwegian population, the cumulative incidence of psychiatric sickness absence episodes (≥14 consecutive days) in women was 1.7% in 1994 and increased to 4.6% in 2000, and in men the incidence increased from 0.8% in 1994 to 2.2% in 2000.[3,11] We found no studies investigating the incidence of sickness absence due to mental disorders in recent years. Therefore, we designed a study to monitor the incidence of certified sick leave due to mental disorders from 2001 to 2007. The research questions were: (i) has the 12-month incidence of sickness absence due to common mental disorders increased from 2001 to 2007 among men and women of different age groups? (ii) What is the annual percentage of sick days due to common mental disorders in different economic sectors between 2001 and 2007?

Methods

ArboNed contracts Dutch companies nationwide to provide their employees with occupational health services and collects information about the employees from the human resources departments of all contracted companies. The ArboNed registry is updated every quarter of a year. Employees of companies who ended the contract with ArboNed were deleted from the registry and employees of newly contracted companies were added. The ArboNed registry contained data on sickness absence and medical certificates of ~1 million employees working in different economic sectors. The primary

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sector including agriculture, forestry, fishery and mining, which constituted 4% of the Dutch workforce in 2005, was not represented in the study population. Twenty-two per cent of the study population worked in the industrial sector and 78% in the service sector (28% public sector and 50% private sector). According to Statistics Netherlands, 23% of the Dutch workforce was employed in the industrial sector in 2005 and 73% in the service sector (23% public sector and 50% private sector).[14]

Dutch sickness absence policies

The ArboNed registry covers only wage earners. When they are absent from work due to sickness, their employer pays sick-leave benefits up to a ceiling that equals 100% of the employee's income. Until 2004, employers compensated sickness absence for 1 year after which employees were granted a disability pension covering 70% of their income. Since 2004, employers pay sick-leave benefits for 2 years of sickness absence, most commonly 100% of the income in the first year and 70% in the second year.

When on sick leave, employees need a medical sickness certificate issued by an occupational physician (OP) utmost in the fifth week of absence. Employees visit the OP who inquires into their medical symptoms, diagnosis, treatment and recovery, as well as work-related factors and private problems that might hinder return to work. The OP determines whether the employee is work incapacitated and certifies sickness absence with a diagnosis according to the 10th version of the International Classification of Diseases (ICD-10).[15] The OP updates medical, social and vocational information in follow-up assessments every 4–6 weeks and motivates sick-listed employees to return to work as quickly as possible.

Common mental disorders

Common mental disorders include criteria-based psychiatric disorders, mostly depressive disorders and anxiety disorders, as well as 'subthreshold' syndromes such as distress and adjustment disorders.[16] In this study, we defined common mental disorders as the total of distress (ICD-10 code R45) and other stress-related disorders (ICD-10 codes F43), depressive disorders (ICD-10 codes F32) and anxiety disorders (ICD-10 codes F40 and F41). Ethical approval was sought from the Medical Ethics Committee of the University Medical Center Groningen, who advised that ethical approval was not required because the data were analysed in retrospect on group level.

Sickness absence measurement

The number of working employees as well as the number of registered medically certified episodes of sickness absence was counted in each calendar year between 2001 and 2007. The calendar days between the first and last day of sickness absence were regarded as sick days, irrespective of the contracted work hours. We only analysed sickness absence episodes exceeding 28 sick days, because shorter episodes were not medically certified by an OP. Sickness absence episodes were cut-off at 31 December of each year.

Statistical analysis

The 12-month incidence of total certified sickness absence was calculated for each year from 2001 to 2007 by dividing the number of medically certified sickness absence episodes by the number of employees covered by ArboNed. Repeated episodes were handled as incident cases. The 12-month incidence of sickness absence due to common mental disorders was calculated for each year from 2001 to 2007 by dividing the number of incident sickness absence episodes due to common mental disorders by the number of employees covered by ArboNed. The results of men and women were stratified in age groups 20–29, 30–39, 40–49, and 50–59 years. Workers <20 years of age were excluded as most Dutch people start employment at an age of 18 years. Workers >59 years were excluded as the policies for early retirement have changed considerably in recent years. The trend in the 12-month incidence of sickness absence over the years was approximated with a regression model of the general form $y = b_0 + b_1x + b_2x^2$ in which $b_0 = -3.96$ [95% confidence interval (CI) −3.93 to −3.98], $b_1 = 0.17$ (95% CI 0.16 to 0.18) and $b_2 = -0.02$ (95% CI −0.03 to −0.01) calculated in R using Epitools.[17]

Information about the economic sector to which a company belonged was available for companies affiliated with trade organizations, but not for the companies without such affiliation. Thus, the epidemiological denominator, that is the total number of employees working in an economic sector, was not exactly known. As a result, incidences could not be calculated for economic sectors. Therefore, we computed sick days due to common mental disorders as percentage of the total number of certified annual sick days in the following economic sectors: construction, trade, financial services, food/drink/tobacco sector, health care, postal and communications sector, education and manufacturing industry.

Results

The age and gender distribution in the dynamic study population was constant during the study period, although the percentage of men aged 30–39 years decreased from 19% in 2001 to 16% in 2007 as is shown in table 1. The 12-month incidence of total certified sickness absence was 9.4% in 2001, increased to a maximum of 13.3% in 2005, and decreased thereafter to 10.5% in 2007 (table 1). The median duration of certified sickness absence episodes ranged between 45 and 73 days. In the study period, sickness absence episodes due to musculoskeletal disorders (35%) were most common, followed by psychiatric disorders (21% of which 20% common mental disorders and 1% specific psychiatric disorders such as psychosis, bipolar disorders and personality disorders), non-specific symptoms such as tiredness, malaise and pain (15%), respiratory disorders (7%), gastrointestinal disorders (4%), cardiovascular disorders (4%) and urogenital disorders (3%).

The 12-month incidence of sickness absence (≥28 days) due to common mental disorders increased to a maximum in 2003 and 2004, and has been decreasing since then, although the 12-month incidence has stabilized in 2007 in women aged 20–29 and 50–59 years, and seems to have increased in women aged 40–49 years as compared with 2006. Furthermore, sickness absence with common mental disorders tends to be lengthy: the median duration of sickness absence episodes varied between 79 and 119 days and was about a month longer than the median duration of all certified episodes.

Sickness absence (≥28 days) due to common mental disorders was found more often in women than in men with the highest 12-month incidences in the age groups 30–39 and 40–49 years, as is shown in figure 1. The 12-month incidence of common mental disorders showed a negative quadratic trend in all age groups of both genders over the years 2001–07.

With respect to the economic sectors, the percentage of sick days due to common mental disorders was the highest in education followed by financial services and health care (table 2). The lowest percentages were found in construction and manufacturing industry. In the postal and

Table 1 Study population and incidences of total certified sickness absence and sickness absence due to common mental disorders from 2001 to 2007

	2001	2002	2003	2004	2005	2006	2007
Number of employees	956 623	962 235	937 030	1 037 149	961 890	970 390	921 741
Men of 20–29 years of age, *n* (%)	115 064 (12)	112 874 (12)	105 242 (11)	112 013 (11)	103 143 (11)	103 655 (11)	98 458 (11)
Men of 30–39 years of age, *n* (%)	177 826 (19)	174 128 (18)	165 400 (18)	179 221 (17)	159 390 (16)	156 785 (16)	148 925 (16)
Men of 40–49 years of age, *n* (%)	156 906 (16)	158 024 (16)	154 270 (16)	172 911 (17)	160 705 (17)	161 563 (17)	153 463 (17)
Men of 50–59 years of age, *n* (%)	119 220 (13)	121 933 (13)	120 880 (13)	134 889 (13)	128 125 (13)	129 134 (13)	122 660 (13)
Women of 20–29 years of age, *n* (%)	101 021 (10)	97 489 (10)	93 971 (10)	102 232 (10)	93 793 (10)	94 679 (10)	89 933 (10)
Women of 30–39 years of age, *n* (%)	121 082 (13)	124 234 (13)	120 175 (13)	132 523 (13)	122 866 (13)	121 027 (12)	114 960 (12)
Women of 40–49 years of age, *n* (%)	105 607 (11)	108 992 (11)	111 300 (12)	125 108 (12)	117 753 (12)	121 751 (13)	115 647 (13)
Women of 50–59 years of age, *n* (%)	59 897 (6)	64 561 (7)	65 792 (7)	78 252 (7)	76 115 (8)	81 796 (8)	77 695 (8)
Total sickness absence							
Number of episodes	90 095	104 193	118 926	129 024	128 044	108 901	96 482
Median duration (95% CI)	73 (72–74)	63 (62–64)	57 (56–58)	53 (53–53)	45 (45–45)	49 (48–50)	55 (54–56)
Total incidence (95% CI)	9.4 (9.4–9.5)	10.8 (10.8–10.9)	12.7 (12.6–12.8)	12.4 (12.4–12.5)	13.3 (13.2–13.4)	11.2 (11.2–11.3)	10.5 (10.4–10.5)
Men of 20–29 years of age (95% CI)	7 (6.9–7.2)	8.4 (8.2–8.5)	9.4 (9.2–9.6)	8.9 (8.7–9.1)	10.2 (10–10.4)	8.4 (8.3–8.6)	7.8 (7.6–7.9)
Men of 30–39 years of age (95% CI)	8.9 (8.8–9.1)	10.4 (10.2–10.5)	11.6 (11.4–11.8)	11.2 (11–11.4)	12.3 (12.1–12.5)	10.1 (10–10.3)	8.8 (8.6–8.9)
Men of 40–49 years of age (95% CI)	9.9 (9.8–10.1)	11.5 (11.3–11.6)	13.6 (13.4–13.8)	13.4 (13.2–13.5)	14 (13.8–14.2)	11.8 (11.7–12)	11 (10.8–11.2)
Men of 50–59 years of age (95% CI)	10.8 (10.6–11.0)	12.4 (12.2–12.6)	15.2 (14.9–15.4)	15.3 (15.1–15.6)	16.2 (16–16.4)	13.7 (13.5–13.9)	13.1 (12.9–13.3)
Women of 20–29 years of age (95% CI)	8.1 (8–8.3)	9.4 (9.3–9.6)	10.4 (10.2–10.6)	10.1 (9.9–10.3)	11 (10.8–11.2)	9.4 (9.2–9.6)	9.1 (8.9–9.3)
Women of 30–39 years of age (95% CI)	9.8 (9.6–10)	10.7 (10.6–10.9)	12.7 (12.5–12.9)	12.4 (12.2–12.5)	13.2 (13–13.4)	11.2 (11.1–11.4)	10.6 (10.4–10.8)
Women of 40–49 years of age (95% CI)	10.6 (10.4–10.8)	12.1 (11.9–12.3)	14.2 (14–14.4)	14.1 (13.9–14.3)	14.3 (14.1–14.5)	12.2 (12–12.4)	11.6 (11.3–11.8)
Women of 50–59 years of age (95% CI)	10.9 (10.6–11.2)	12 (11.8–12.3)	14.7 (14.4–15)	14 (13.7–14.2)	14.8 (14.5–15.1)	12.3 (12–12.5)	11.7 (11.5–12)
Common mental disorders							
Number of episodes	21 140	22 803	24 917	27 533	22 682	20 013	18 513
Repeated episodes [*n* (%)]	816 (4)	967 (4)	1187 (5)	1438 (5)	1156 (5)	1003 (5)	942 (5)
Median duration (95% CI)	119 (116–122)	98 (96–100)	87 (85–89)	80 (79–81)	79 (77–81)	83 (81–85)	87 (85–89)
Total incidence (95% CI)	2.2 (2.2–2.2)	2.4 (2.3–2.4)	2.7 (2.6–2.7)	2.7 (2.6–2.7)	2.4 (2.3–2.4)	2.1 (2–2.1)	2 (2–2)
Men of 20–29 years of age (95% CI)	1.2 (1.2–1.3)	1.4 (1.4–1.5)	1.5 (1.4–1.6)	1.4 (1.4–1.5)	1.3 (1.3–1.4)	1.1 (1–1.1)	1 (0.9–1.1)
Men of 30–39 years of age (95% CI)	2.0 (1.9–2)	2.2 (2.2–2.3)	2.4 (2.3–2.4)	2.4 (2.3–2.4)	2.1 (2.1–2.2)	1.8 (1.7–1.9)	1.6 (1.6–1.7)
Men of 40–49 years of age (95% CI)	2.1 (2.1–2.2)	2.3 (2.2–2.3)	2.5 (2.5–2.6)	2.5 (2.4–2.6)	2.2 (2.1–2.3)	1.9 (1.9–2)	1.9 (1.8–1.9)
Men of 50–59 years of age (95% CI)	2.1 (2–2.2)	2 (2–2.1)	2.3 (2.2–2.4)	2.3 (2.2–2.4)	2 (1.9–2.1)	1.8 (1.8–1.9)	1.8 (1.7–1.9)
Women of 20–29 years of age (95% CI)	2.5 (2.4–2.6)	2.7 (2.6–2.8)	3 (2.9–3.1)	3 (2.9–3.1)	2.6 (2.5–2.7)	2.3 (2.2–2.4)	2.3 (2.2–2.4)
Women of 30–39 years of age (95% CI)	3 (2.9–3.1)	3.2 (3.1–3.3)	3.7 (3.6–3.8)	3.8 (3.7–3.8)	3.3 (3.2–3.4)	3 (2.9–3.1)	2.9 (2.8–3)
Women of 40–49 years of age (95% CI)	2.7 (2.6–2.8)	3 (2.9–3.1)	3.4 (3.2–3.5)	3.4 (3.3–3.5)	3 (2.9–3.1)	2.5 (2.4–2.6)	2.6 (2.5–2.7)
Women of 50–59 years of age (95% CI)	2.4 (2.2–2.5)	2.3 (2.2–2.5)	2.7 (2.6–2.8)	2.6 (2.5–2.7)	2.3 (2.2–2.4)	2.1 (2–2.2)	2.1 (2–2.2)

The annual incidence of certified sickness absence between 2001 and 2007 in a dynamic population of ~1 million Dutch employees stratified by age and gender. The table shows the number of sick days, episodes, median duration in days and incidence of total certified sickness absence as well as sickness absence due to common mental disorders per 100 employees

communications sector, the percentage of sick days due to common mental disorders halved from 2001 to 2007.

Discussion

This observational study showed that in the period 2001–07, about one-fifth of medically certified sickness absence episodes exceeding 28 days were due to common mental disorders and the 12-month incidence followed a negative quadratic trend with the highest incidences in the years 2003 and 2004. The percentage of sick days due to mental disorders was highest in the education sector (39%) and lowest in the construction sector (16%).

The strength of our study is that it covered a large population of ~1 million Dutch employees working in different economic sectors representative for the Dutch workforce. Another strength is the use of the medical diagnoses on the sick leave certificates instead of worker reported complaints.

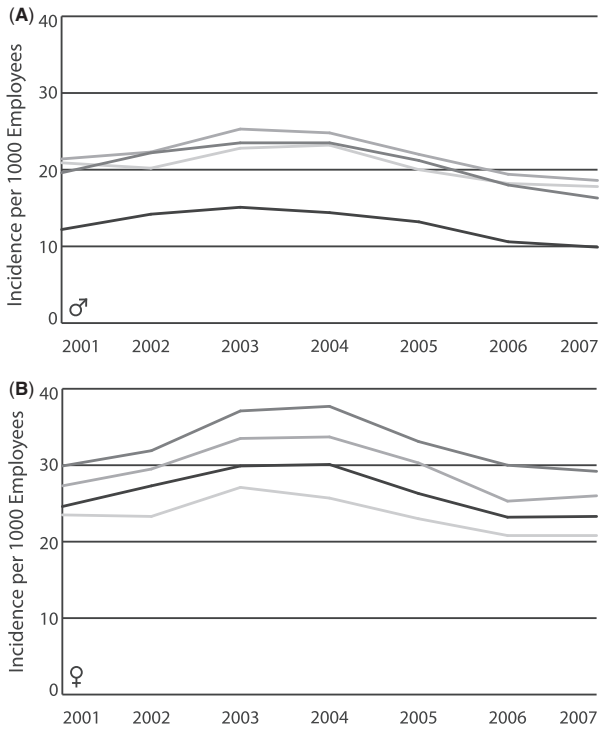

Figure 1 The trends in the 12-month incidence of sickness absence due to common mental disorders over the period 2001–07 in men (♂) (A) and women (♀) (B) of different age: 20–29 years (black line), 30–39 years (dark grey line), 40–49 years (medium grey line) and 50–59 years (light grey line)

In our study, OPs certified sickness absence according to the ICD-10 classification of diseases. The validity of psychiatric diagnoses has been subject to an ongoing scientific debate. In a pilot study of 8500 post sorters working for the Dutch Postal Services, all 546 employees who reported sick in 2003 consulted an OP and a psychiatrist.[18] There was an 81% agreement between OPs and psychiatrists on the group diagnosis common mental disorder. OPs, however, frequently certified sick leaves as distress or adjustment disorders, whereas psychiatrists more often diagnosed depressive disorders and anxiety disorders. Thus, the validity of specific diagnoses within the group of common mental disorders was questionable. This finding confirms the results of O'Niell *et al.*[19] who also reported a good agreement between OPs and psychiatrists for the diagnosis mental ill health, though inter-observer κ's were higher for well-described psychiatric disorders than for depression, anxiety and stress.

The 12-month incidence of sickness absence (≥28 days) due to common mental disorders ranged between 2.0% and 2.7% in our study which is lower than the incidence rate of 5.7 per 100 person-years in the general Dutch population.[20] The lower incidence we found might be explained by the fact that psychiatric symptoms do not always result in sick leave. Most mental disorders have a slow and gradually fluctuating onset where the transition from healthy to ill is often based on judgement rather than objectivity. Judgement of one's ill health is often referred to as illness. Sickness, however, is related to the role of a person in different societal areas of life such as work. These concepts are often thought to overlap, but in a population of 3500 Swedish workers 67% reported an illness between 1998 and 2001, whereas only 14% had been on sick leave (≥14 consecutive days) in this period.[21] For mental disorders, an illness to sickness ratio of 11 was reported for men and 18 for women.[22] When employees with mild to moderate mental disorders are at work while not in optimal health, the incidence of sickness absence due to mental disorders must be expected to be lower than the incidence of psychiatric disorders in the general population.[23] Besides, Terluin *et al.*[24] found that only 1% of the employees working in a Dutch telecom company often felt depressed or panicky. Possibly psychiatric morbidity is less common in the workforce than in the general population as a result of a selection process known as the 'healthy-worker effect', which means that persons with poor (mental) health leave labour into unemployment or disability benefits.

Trends in the incidence of sickness absence with common mental disorders

Sickness absence levels are known to fluctuate over the years. The 12-month incidence of sickness absence (≥28 consecutive

Table 2 Percentage of sick days due to common mental disorders per economic sector

Sector	2001 (%)	2002 (%)	2003 (%)	2004 (%)	2005 (%)	2006 (%)	2007 (%)	Mean sector percentage over 7 years
Construction	19	18	16	16	16	14	13	**16**
Trade	28	26	23	25	22	24	24	**24**
Financial services	35	33	32	32	29	29	29	**31**
Food, drink and tobacco	25	24	23	23	21	21	20	**22**
Health care	32	30	30	32	29	27	29	**30**
Postal service and communications	30	28	23	22	17	16	16	**22**
Education	41	42	36	39	37	37	39	**39**
Manufacturing industry	24	22	21	21	17	18	18	**20**
Mean percentage of sick days of all sectors combined	**28**	**27**	**25**	**26**	**23**	**23**	**23**	**25**

The table shows the annual sick days due to common mental disorders as a percentage of total certified sick days per economic sector between 2001 and 2007

days) with common mental disorders was highest in 2003 and 2004. The subsequent decrease may be the result of changes in Dutch sickness absence policies aimed at reducing disability claims.[26] Being forced to compensate absence from work due to sickness for 2 years, employers are motivated to rehabilitate their sick employees to restrict the costs of sickness absence. On the other hand, however, employers are now free to adjust sick leave benefits in dialogue with their works council. For example, a company can decide to pay 85% of the employee's income in both years of sickness absence or 90% in the first year and 80% in the second. Such financial cut-backs in sickness benefits may prevent employees from taking sick leave. We observed a decline in the incidence of total certified sickness absence since 2005, confirming the report that long-term sickness absence levels have decreased after the introduction of the new policies in the Netherlands in 2004.[27]

An alternative explanation for the negative quadratic trend in the 12-month incidence of sickness absence with common mental disorders might be the economic market development. It has been reported that the probability of long-term sickness absence was increased in areas of poor economy.[13,28] In the period 2001–03, there was a decline in Dutch economy, reaching a low point in the summer of 2003.[29] From then on the economic market position has gradually increased and more workers were needed in the labour force. On the other hand, a pro-cyclical pattern in which absence-prone workers were more likely to take sick leave during economic upswings and remain employed during economic recession has been recognized.[30–32] These contradictory findings call for ongoing epidemiological monitoring of sickness absence over time to examine patterns and trends.

Sickness absence with common mental disorders in economic sectors

Our study showed that the percentage of sick days due to common mental disorders was highest in the education sector, followed by financial services and health care. Thus, the incidence of sickness absence due to common mental disorders seems to be highest in jobs with many client contacts. In the UK, employees in personal service occupations were 57% more likely to be absent than those in other sectors.[33] It would be interesting to study whether emotional job demands play a role in the aetiology of common mental disorders as it has recently been reported that in Danish women an elevated risk of depression was related to high emotional demands and to working with people.[34]

The percentage of sick days due to common mental disorders decreased in all economic sectors. The decline was most evident in the postal and communications sector. The Dutch Postal Services started a pilot in 2003 to reduce sickness absence due to mental disorders, intervening at three levels: (i) employees were informed about signs of work stress, (ii) managers participated in workshops to improve their awareness of the mental health of subordinates and (iii) OPs followed psychiatric refresher courses and were peer supervised thereafter.[18] Possibly, the percentage of sick days due to common mental disorders is reduced by early recognition followed by adequate treatment which shortens the sickness absence duration or prevents recurrence of sickness absence.

In conclusion, the results of this study did not confirm the belief that sickness absence due to common mental disorders is still increasing, and recent trends must be considered in the light of changes in sick leave benefits, economic situation and company policies.

Conflicts of interest: None declared.

Key points

- The 12-month incidence of sickness absence due to common mental disorders showed a negative quadratic trend in the period 2001–07 and has decreased since 2004.
- The percentage of sick days due to common mental disorders was highest in the education sector, and lowest in construction and manufacturing industry.
- Sickness absence due to common mental disorders should be considered in the context of sickness compensation systems, economic market position and company policies.

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